

ABSTRACT

Methods, apparatus and systems for dynamically controlling a digital communication system, such as a DSL system, collect information about digital communication lines in the system and adaptively and/or dynamically determine line and signal characteristics of the digital communication lines, including interference effects. Based on the determined characteristics and the desired performance parameters, operation of the digital communication lines is adjusted to improve or otherwise control the performance of the system. The collection and processing of information may be performed by a party that is not a user in the system. This independent party also may control operational characteristics and parameters of the system. The invention can be used to eliminate or reduce signal interference such as crosstalk that can be induced on communication lines in systems such as DSL systems. Specific iterative power allocation and vectored transmission techniques and apparatus are disclosed.